

**REMARKS**

At the time of the Office Action dated September 7, 2006, claims 1-22 were pending. Applicant acknowledges, with appreciation, the Examiner's indication that claims 4, 8, 9, 15, 19, and 20 would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

In this Amendment, claims 1, 4, 8, 9, 12, 15, 19, and 20 have been amended. Care has been exercised to avoid the introduction of new matter. Specifically, independent claims 1 and 12 have been amended to clarify that the optical transmitter is configured for outputting CWDM signal light. Support for this amendment can be found in, for example, paragraph [0037] of the specification. Claims 4, 8, 9, 15, 19, and 20, indicated to be allowable, have been amended to be independent form.

**Claims 1, 5, 12, and 16 have been rejected under 35 U.S.C. §103(a) as being unpatentable over Zhou et al., in view of Deng et al., and further in view of Essiambre et al., and further in view of Miller.**

In the statement of the rejection, the Examiner asserted that the applied combination of Zhou et al., Deng et al., Essiambre et al., and Miller teaches the claimed invention.

It is well established precedent that to establish *prima facie* obviousness of a claimed invention, all the claim limitations must be taught or suggested by the prior art. *In re Royka*, 490 F.2d 981, 180 USPQ 580 (CCPA 1974). To establish the requisite motivation to support a finding of obviousness under 35 U.S.C. §103, "clear and particular" factual findings must be made as to a specific understanding or specific technological principle that would have realistically compelled one having ordinary skill in the art to modify a particular reference to

arrive at the claimed invention based upon facts-- not generalizations. *Ruiz v. A.B. Chance Co.*, 234 F.3d 654, 57 UPSQ2d 1161 (Fed. Cir. 2000); *Ecolchem Inc. v. Southern California Edison Co.*, *supra*; *In re Kotzab*, 217 F.3d 1365, 55 USPQ 1313 (Fed. Cir. 2000); *In re Dembiczak*, *supra*. Such motivation, must be based upon "clear and particular" showings of combinability in the prior art -- not in the application disclosure. *Panduit Corp. v. Dennison Mfg. Co.*, 774 F.2d 1082, 227 USPQ 337 (Fed. Cir. 1985).

Applicant submits that the applied combination of Zhou et al., Deng et al., Essiambre et al., and Miller does not teach an optical transmission system including all the limitations recited in independent claims 1 and 12, as amended. Specifically, the applied combination does not teach, at a minimum, the optical transmitter is configured for outputting CWDM (Coarse Wavelength Division Multiplexing) signal light in a signal wavelength band, and the accumulated chromatic dispersion at the operation wavelength is set to negative over a temperature range of 0°C to 60°C, as claimed, at least for the following reasons.

In the statement of the rejection, the Examiner admitted that Zhou et al. do not disclose that the optical transmitter light source is a non-temperature controlled direct modulation light source. However, the Examiner asserted that the apparatus of Zhou et al. can be modified by Deng et al. disclosing that inexpensive, non-temperature controlled lasers in WDM systems can be used with sufficient wavelength spacing. This assertion is not viable for the reasons set forth below.

Zhou et al. disclose a DWDM optical transmission system. In the DWDM optical transmission system, a non-temperature controlled directed modulation light source is not used because the output center wavelength of the source fluctuate a lot according to temperature change, and such fluctuation cannot be allowed for the DWDM system. In contrast, such a light

source can be used in a CWDM optical transmission system as recited in independent claims 1 and 12 because the CWDM optical transmission system allows broad wavelength spacing. Accordingly, it is apparent that a non-temperature controlled directed modulation light source is not applicable to the apparatus of Zhou et al., and thus, there is no motivation to modify Zhou et al. based on the teachings of Deng et al. to have a non-temperature controlled directed modulation light source, even if it is assumed that Deng et al. discloses that in expensive, non-temperature controlled lasers in WDM systems can be used with sufficient wavelength spacing as asserted by the Examiner for the sake of this response.

Furthermore, the Examiner asserted that Zhou et al. disclose that the dispersion after compensation is zero or a predetermined value of residual dispersion, but does not explicitly disclose that, at either the signal emitting end of the optical fiber transmission line or at the signal receiving end of the optical receiver, respectively, the accumulated chromatic dispersion at the operation wavelength is set to be negative. However, the Examiner asserted that Essiambre et al. disclose using small negative residual dispersion results, and concluded that a person skilled in the art would have been motivated to modify the apparatus of Zhou et al. based on the teachings of Essiambre et al. such that “the accumulated chromatic dispersion at the operation wavelength is set to negative...”, as claimed. This assertion is not viable for the reason set forth below.

The DWDM optical transmission system is constituted such that its accumulated chromatic dispersion is set to be near zero. However, the CWDM optical transmission system does not generally carry out a dispersion compensation (see paragraph [0007]). In the claimed optical transmission system, an accumulated chromatic dispersion is consistently negative over the temperature range in use. By setting the accumulated chromatic dispersion into negative,

sensitivity can be increased because each signal pulse is compressed through compensation of positive chirp of the pulse.

Accordingly, because Zhou et al. disclose a DWDM optical transmission system, an accumulated chromatic dispersion is not set to be negative over the temperature range in use, as claimed, but is set to be near zero. Therefore, there is no motivation to modify Zhou et al. based on the teachings of Essiambre et al. such that the accumulated chromatic dispersion is not set to be negative in the apparatus of Zhou et al.

Moreover, Essiambre et al. teach a dispersion in the DWDM optical transmission system (see paragraph [0036] mentioning “50GHz”). In the DWDM optical transmission system, an external modulation light source is generally used as a light source. In contrast, since a direct modulation light source has a large positive chirp, it is not used in the DWDM optical transmission system. It is clear that, in the case that such a direct modulation light source is used in the DWDM optical transmission system of Essiambre et al., the result shown in Fig. 4 of the present application cannot be obtained. Fig. 4 is a graph depicting the chromatic dispersion characteristics of the disclosed optical transmission system of the present application.

Accordingly, Essiambre et al. do not teach that “the accumulated chromatic dispersion at the operation wavelength is set to negative over a temperature range of 0°C to 60°C, at the signal emitting end of the optical fiber transmission line,” as claimed.

It is noted that Miller, describing temperature compensated fiber Bragg gratings (FBG), does not cure the above described deficiencies of Zhou et al.

Based on the foregoing, Applicant submits that the applied combination of Zhou et al., Deng et al., Essiambre et al., and Miller does not teach an optical transmission system including all the limitations recited in independent claims 1 and 12, as amended, within the meaning of 35

U.S.C. §103. Dependent claims 5 and 16 are also patentably distinguishable over Zhou et al., Deng et al., Essiambre et al., and Miller at least because these claims include all the limitations recited in independent claims 1 and 12, respectively. Applicant, therefore, respectfully solicits withdrawal of the rejection of claims 1, 5, 12, and 16 under 35 U.S.C. §103, and favorable consideration thereof.

**Claims 2, 3, 6, 7, 13, 14, 17, and 18 have been rejected under 35 U.S.C. §103(a) as being unpatentable over Zhou et al., in view of Deng et al., and further in view of Essiambre et al., and further in view of Miller, and further in view of Kartalopoulos; and claims 10, 11, 21, and 22 have been rejected under 35 U.S.C. §103(a) as being unpatentable over Zhou et al., in view of Deng et al., and further in view of Essiambre et al., and further in view of Miller, and further in view of Gabitov.**

Each of the above rejections of claims 2, 3, 6, 7, 13, 14, 17, and 18 and of claims 10, 11, 21, and 22 is traversed. Specifically, claims 2, 3, 6, 7, 10, and 11 depend from independent claim 1, and claims 13, 14, 17, 18, 21, and 22 depend from independent claim 12. Applicant incorporates herein the arguments previously advanced in traversing the imposed rejection of claims 1 and 12 under 35 U.S.C. § 103 for obviousness predicated upon Zhou et al., in view of Deng et al., and further in view of Essiambre et al., and further in view of Miller. The Examiner's additional comments and secondary reference to Kartalopoulos and Gabitov do not cure the previously argued deficiencies in the attempted combination of predicated upon Zhou et al., Deng et al., Essiambre et al., and Miller. .

Applicant, therefore, respectfully solicits withdrawal of the rejections of claims 2, 3, 6, 7, 13, 14, 17, and 18 and of claims 10, 11, 21, and 22 under 35 U.S.C. § 103.

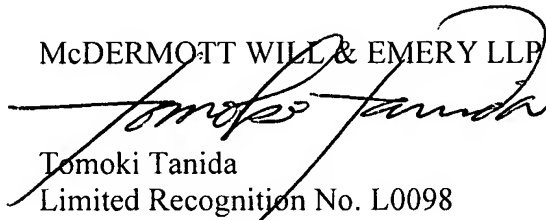
**Conclusion**

It should, therefore, be apparent that the imposed rejections have been overcome and that all pending claims are in condition for immediate allowance. Favorable consideration is, therefore, respectfully solicited.

To the extent necessary, a petition for an extension of time under 37 C.F.R. 1.136 is hereby made. Please charge any shortage in fees due in connection with the filing of this paper, including extension of time fees, to Deposit Account 500417 and please credit any excess fees to such deposit account.

Respectfully submitted,

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